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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.          | CONFIRMATION NO. |
|---|-------------|----------------------|------------------------------|------------------|
| 10/606,930  | 06/26/2003  | Robert L. Gerlach    | F129                         | 3850             |
| 25784   | 7590        | 07/11/2005           |                              |                  |
| MICHAEL O. SCHEINBERG<br>P.O. BOX 164140<br>AUSTIN, TX 78716-4140 |             |                      | EXAMINER<br>QUASH, ANTHONY G |                  |
|   |             |                      | ART UNIT<br>2881             | PAPER NUMBER     |

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                               |  |
|------------------------------|-------------------------------|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/606,930 | Applicant(s)<br>GERLACH ET AL |  |
|                              | Examiner<br>Anthony Quash     | Art Unit<br>2881              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/28/05 (amendment).
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>see rejection</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

It is noted that applicants' amendment, filed 3/28/05 has cancelled claim 1.

#### ***Priority***

It is noted for the record by the examiner, as explained in applicants' arguments dated, 2/7/05, that the listing of the provisional application 60/402,010 in the oath/declaration was an inadvertent error, and that applicants are not claiming priority from this provisional.

#### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 3/25/05; 5/21/05; 6/8/05 was filed after the mailing date of the Non-final office action on 10/5/05. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18-21,23 are rejected under 35 U.S.C. 102(e) as being anticipated by Owens [6,828,729]. As per claim 18, Owens [6,828,729] discloses a method of detecting positive or negative charged particles comprising selectively attracting positive ions or electrons from a target using an input electrode (780), if positive ions are selectively attracted, converting the positive ions to electrons by causing the positive ions to impact on a surface not part of the input electrode (780), the impact causing the emission of electrons; and detecting using an electron detector either the electrons emitted by impact of the positive ions from the surface or electrons selectively attracted from the target and not impacting the surface. Owens [6,828,729] also discloses the converting of positive ions to electrons by causing the positive ions to impact on a surface includes causing the positive ions to impact on a generally cylindrical surface (fig. 2), converting the positive ions to electrons by causing the positive ions to impact on the surface of multiple generally parallel plates, and converting the positive ions to electrons by causing the positive ions to impact on a surface includes causing the positive ions to impact on a surface comprising aluminum oxide or stainless steel. See Owens [6,828,729] abstract, figs. 1-2,5,8,10-12, column 2, col. 3 lines 60-65, col. 4 lines 15-35, columns 5-6, col. 7 line 48 – col. 8 line 20, and claim 11.

As per claim 23, Owens [6,828,729] discloses a charged particle detector suitable for use in a focused ion beam system including a focused ion beam that can be directed to a target and that produces particles upon impact of the ion beam with the target, the charged particle detector comprising: an input screen (780) to which voltages

can be selectively applied relative to the target so as to attract positive or negative secondary charged particles emitted from the target, an ion-to-electron converter including a material that emits electrons when impacted by charged particles from the target, and a scintillator detector for detecting electrons originating at the target or electrons originating in the ion-to-electron converter, the ion-to-electron converter being positioned between the input screen (780) and the scintillator detector (800). See Owens [6,828,729] abstract, figs. 1-2,5,8,10-12, column 2, col. 3 lines 60-65, col. 4 lines 15-35, columns 5-6, col. 7 line 48 – col. 8 line 20, and claim 11.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishitani Toru [JP 07-142022]. As per claims 2,13,22, Ishitani Toru [JP 07-142022] teaches a charged particle detector suitable for use in a focused ion beam system including a focused ion beam that can be directed to a target and that produces secondary particles upon impact of the ion beam with the target, the charged particle detector comprising: an input screen (mesh) to which voltages can be selectively applied relative to the target so as to attract positive or negative secondary particles emitted from the target. See Ishitani Toru [JP 07-142022] abstract, figs. 1-2,

paragraphs [0002-0010,0014-0015]. However, it does not explicitly state an ion-to-electron converter. Ishitani Toru [JP 07-142022] does however teach an SP detector, which the examiner recognizes as being an ion-to-electron converter/performing an equivalent function, is an equivalent structure known in the art. See Ishitani Toru [JP 07-142022] paragraphs [0004-0010]. Here it states in paragraph [0007], "... the acceleration impact of the forward secondary ion is collected and carried out to a mesh electrode, it is changed into an electron, and detects this conversion electron with SP detector." Therefore, because these two ion-to-electron converters were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the SP detector for an ion-to-electron converter. In addition, Ishitani Toru [JP 07-142022] teaches the SP detector with the mesh being configurable in a first configuration to convert ions emitted from a target to electrons and configurable in a second configuration to pass electrons from the target through the SP detector, and a scintillator detector for detecting electrons originating at the target and passing through the SP detector or electrons originating in the SP detector, the SP detector being positioned between the input screen (mesh) and the scintillator detector. See Ishitani Toru [JP 07-142022] abstract, figs. 1-2, paragraphs [0002-0010,0014-0015].

As per claims 3-5, Ishitani Toru [JP 07-142022] teaches the SP detector being configurable in the first configuration or second configuration solely by altering one or more voltages on components of the ion-to-electron converter, a voltage source (54) for applying a first voltage to the SP detector for attracting positively charged ions from the

target and causing the positively charged ions to impact the SP detector and generate electrons for detection by the scintillator detector and for applying a second voltage to the ion-to-electron detector for passing electrons from the target through the SP detector to the scintillator detector, and a voltage source (54) for applying a first voltage to the input screen for attracting positively charged ions from the target and for applying a second voltage to the input screen for attracting positively charged ions from the target. See Ishitani Toru [JP 07-142022] abstract, figs. 1-2, paragraphs [0002-0010,0014-0015].

Claims 6-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishitani Toru [JP 07-142022] in view of Owens [6,828,729]. As per claim 6,16, Ishitani Toru [JP 07-142022] teaches all aspects of the claim except for explicitly stating that the ion-to-electron converter comprise generally parallel plates. Owens [6,828,729] does teach the ion-to-electron converter (MCP) comprises generally parallel plates. See Owens [6,828,729] abstract, and figs. 1-2. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the ion-to-electron converter comprises generally parallel plates in order to aid in guide the electrons to the scintillator and also aid in producing ions as a result of impacting to the plates.

As per claims 7,11,15, Owens [6,828,729] teaches the ion-to-electron converter comprises a hollow, generally cylindrical structure. See Owens [6,828,729] fig. 2.

As per claims 8,12,17, Owens [6,828,729] teaches the ion-to-electron converter comprises aluminum or stainless steel. See Owens [6,828,729] abstract.

As per claims 9-10, Ishitani Toru [JP 07-142022] teaches an ion source, ion optics for focusing ions from the ion source into an ion beam and directing it towards a target; and a charged particle detector for detecting secondary positive ions or secondary electrons emitted from the target as a result of the impact of the ion beam, and the SP detector being configurable in a first configuration to convert ions emitted from a target to electrons for detection by the electron detector and configurable in a second configuration to pass electrons from the target through the SP detector for detection by the electron detector. See Ishitani Toru [JP 07-142022] abstract, figs. 1-2, paragraphs [0002-0010,0014-0015].

As per claim 14, Ishitani Toru [JP 07-142022] teaches the electron detector comprises a scintillator detector. See Ishitani Toru [JP 07-142022] abstract.

### ***Response to Arguments***

Applicant's arguments with respect to claims 2-23 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 6,051,831 to Koster, 5,463,218 to Hollie, and 6,906,318 to Bateman are considered pertinent to applicants' disclosure. Koster [6,051,831] is considered pertinent due to its discussion on a high mass detector with



high mass resolution for time-of-flight mass spectrometers. Hollie [5,463,218] is considered pertinent due to its discussion on a detection of very large molecular ions in a time-of-flight mass spectrometer. Bateman [6,906,318] is considered pertinent due to its discussion on an ion detector.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Quash whose telephone number is (571)-272-2480. The examiner can normally be reached on Monday thru Friday 9 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571)-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2881

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Quash

*AQ*  
6/30/05

  
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